CLAIMS

1. A method of manufacturing a piezoelectric/electrostrictive device (10) including a pair of thin plates (12a, 12b) confronting each other, a fixing member (14) supporting the thin plates (12a, 12b) thereon, and movable portions (22a, 22b) disposed on end portions of the pair of thin plates (12a, 12b), comprising the steps of:

forming protrusions (72) which will subsequently serve as the movable portions (22a, 22b) on principal surfaces of first ceramic green sheets (60A, 60B) which will subsequently serve as the thin plates (12a, 12b), according to at least a single thick film forming process;

stacking said first ceramic green sheets (60A, 60B) and a second ceramic green sheet (64) which will subsequently serve as the fixing member (14), into a ceramic green laminated body (50);

baking said ceramic green laminated body (50) into an integral ceramic laminated body (52); and

forming piezoelectric/electrostrictive elements (18a, 18b) on said ceramic laminated body (52), baking said piezoelectric/electrostrictive elements (18a, 18b) and removing unnecessary portions therefrom to fabricate the piezoelectric/electrostrictive device (10).

2. A method of manufacturing a piezoelectric/electrostrictive device according to claim 1,

wherein said protrusions (72) have a width (L) of 30 µm or greater.

3. A method of manufacturing a piezoelectric/electrostrictive device according to claim 1 or 2, wherein said protrusions (72) have a thickness (H) in the range from 2 to 50 µm.

4. A method of manufacturing a piezoelectric/electrostrictive device according to any one of claims 1 through 3, wherein said protrusions (72) include a peripheral portion having a thickness H1 and a central thickest portion having a thickness H2, and the thicknesses have a ratio as follows:

$H1/H2 = 1/3$ to $3/4$.

5. A method of manufacturing a piezoelectric/electrostrictive device according to any one of claims 1 through 3, wherein said protrusions (72) include a central portion having a thickness H1 and a peripheral thickest portion having a thickness H2, and the thicknesses have a ratio as follows:

$H1/H2 = 1/3$ to $3/4$.

6. A method of manufacturing a piezoelectric/electrostrictive device according to claim 5, wherein if a material for the protrusions (72) for making

the thickness (H) of said protrusions (72) substantially uniform has a viscosity A in an order of 10,000 cps, then said protrusions (72) are made of a material having a viscosity higher than said viscosity A.

7. A method of manufacturing a piezoelectric/electrostrictive device according to any one of claims 1 through 5, wherein when said protrusions (72) are formed on said first ceramic green sheets (60A, 60B), a first protrusion (72A) is formed on said first ceramic green sheets (60A, 60B), and thereafter a second protrusion (72B) is formed on said first protrusion (72A) in such a displaced position that the second protrusion (72B) partly overlaps said first protrusion (72A).

8. A method of manufacturing a piezoelectric/electrostrictive device according to claim 7, wherein said first protrusion (72A) or said second protrusion (72B) has a thickness H1, a thickest portion (82) of an overlapping region (80) of the first protrusion (72A) and the second protrusion (72B) has a thickness H2, and the thicknesses have a ratio as follows:

$$H1/H2 = 1/3 \text{ to } 3/4.$$

9. A method of manufacturing a piezoelectric/electrostrictive device according to claim 7, wherein an overlapping region (80) of the first protrusion

(72A) and the second protrusion (72B) has a thickness H1, a thickest portion of said first protrusion (72A) or said second protrusion (72B) has a thickness H2, and the thicknesses have a ratio as follows:

$H1/H2 = 1/3$ to $3/4$.

10. A method of manufacturing a piezoelectric/electrostrictive device according to any one of claims 1 through 6, wherein when said protrusions (72) are formed on said first ceramic green sheets (60A, 60B), a plurality of protrusions (72) are formed separately from each other on said first ceramic green sheets (60A, 60B).

11. A method of manufacturing a piezoelectric/electrostrictive device according to any one of claims 1 through 10, wherein said protrusions (72) are formed of a paste comprising a ceramic material which has the same composition as said first ceramic green sheets (60A, 60B), an organic binder, and an organic solvent according to a screen printing process.

12. A method of manufacturing a piezoelectric/electrostrictive device according to any one of claims 1 through 10, wherein a paste comprising a ceramic material, a metal material, an organic binder, and an organic solvent is used.

13. A method of manufacturing a piezoelectric/electrostrictive device according to claim 12, wherein said metal material comprises a platinum-group metal.

14. A method of manufacturing a piezoelectric/electrostrictive device according to any one of claims 1 through 10, wherein when said protrusions (72) are formed of a paste comprising a ceramic material which has the same composition as said first ceramic green sheets (60A, 60B), an organic binder, and an organic solvent according to a screen printing process, said protrusions (72) have a porosity of 50 % or less.

15. A method of manufacturing a piezoelectric/electrostrictive device according to any one of claims 1 through 10, wherein when said protrusions (72) are formed of a paste comprising a ceramic material which is different from said first ceramic green sheets (60A, 60B), an organic binder, and an organic solvent according to a screen printing process, said protrusions (72) have a porosity in the range from 5 to 30 %.